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General Manager

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DIVISION OF OIL
GAS & MINING

November 4, 1985

Ms. Susan C. Linner
Reclamation Biologist/Permit Supervisor
State Of Utah - Natural Resources
Oil Gas & Mining
355 West North Temple
3 Triad Center - Suite 350
Salt Lake City, Utah 84180-1203

Dear Ms. Linner:

Please find enclosed the final report regarding the test plot program located at the Apex Shaft Site. The report and field examination were completed by Joseph M. Jarvis, Biologist/Principal, JBR Consultants Group.

If you require any further information regarding this revegetation study, please advise.

Very truly yours,

Glenn M. Mellor
Senior Geologist

GMM/lrl

cc: T. B. Hannifin, Jr.
Files

STRATHMORE BOND
25% COTTON FIBER USA



CONSULTANTS GROUP

GEOLOGY

ENGINEERING

ENVIRONMENT

HYDROLOGY

Burgin Mine Test Plots

Introduction

In 1981, a test plot program was devised in conjunction with the Division of Oil, Gas and Mining to deal with revegetation of waste rock at the Apex Shaft. Sufficient topsoil was not available to cover all the old and new waste rock areas associated with this development shaft of the Burgin Mine complex. Thus the attempt to seed directly into waste rock piles to create a vegetative cover. The complete test plot program is available in the 1982 Notice of Intent for the Apex Shaft of the Burgin Mine.

The soil treatment was initiated in April, 1982 by liming the acid waste rock site with calcium carbonate (CaCO_3). After a six day wait the seeding was begun under the following program:

1. Plots 100 ft²

A,B,C and D on the acid waste rock

E,F,G, and H on the neutral waste rock

I,J,K and L on the soil storage pile

2. Seed Mixture applied at one (1) ounce per plot

<u>Common Name</u>	<u>Scientific Name</u>	<u>lbs/A</u>
crested wheatgrass	Agropyron cristoratum	5
Indian ricegrass	Oryzopsis hymenoides	5
Russian wildrye	Elymus junceus	5
yellow sweetclover	Melilotus officinalis	5
Total		20

3. Fertilization with diammonium phosphate 18-45-0 at 6 ounces per plot

4. Mulch was Conweb Hydro Mulch Fiber of one bale for six plots

5. Test plot preparation:

Acid Waste Rock

- A. seed and lime
- B. seed, lime and fertilize
- C. seed, lime and mulch
- D. seed, lime, fertilize and mulch

Neutral Waste Rock

- E. seed only
- F. seed and fertilize
- G. seed and mulch
- H. seed, fertilize and mulch

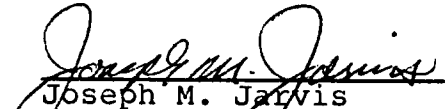
Topsoil Pile

- I. seed only
- J. seed and fertilize
- K. seed and mulch
- L. seed, fertilize and mulch

6. Results from August, 1985 field work using 3 random quadrats per plot:

Plot	% Total Ground Cover	# Species Seed Mix	# Plants Seed Mix	# Plants 100 ft ²
A	15	3	24	348
B	5	2	8	116
C	5	2	33	478
D	7	2	20	290
	Mean 8	2	21	308
	# Species: crested wheatgrass - 70			
	Indian ricegrass - 1			
	yellow sweetclover - 14			
E	1	1	2	29
F	12*	1	25	362
G	1	1	4	58
H	6*	1	7	101
	Mean 5	1	9	137
	# Species: crested wheatgrass - 38			
	* fertilized			
I	12	2	11	159
J	25*	2	15	217
K	13	2	21	304
L	26*	2	12	174
	Mean 19	2	15	213
	# Species: crested wheatgrass - 45			
	Russian wildrye - 3			
	yellow sweetclover - 11			
	* fertilized			

The seeding trials occurred during a period of above normal precipitation and plant growth consequently the results were achieved under ideal conditions. The seeded cover on the waste rock plots were small thin plants of which only the crested wheatgrass had reached maturity. The fertilization of plots on the neutral waste rock area produced the only difference in groundcover attributable to the effects of treatment. This effect also appeared in the topsoil plots. Plots J and L (fertilized topsoil) were the only plots to achieve the revegetation requirement of Rule M-10 (70% of 25% native groundcover or diversity of stand). Certainly the groundcover on the waste rock sites was not sufficient to have any positive effects on surface stabilization or erosion. Any use of the stored topsoil for revegetation will require fertilization for best growth potential.


Joseph M. Jarvis
Biologist/Principal
JBR Consultants Group